

The remaining mirror mentioned above was originally designed for a stenopæic slit to be used with the instrument when employed as an optometer for the determination of astigmatism. It consisted of a thin plate with a slit in it, whose length was equal to the diameter of the perforations in the cylinder. This was mounted like the mirror, and made to fit in the mirror cell in which it revolved, so as to allow the slit to correspond with any given meridian of the cornea. The meridian once determined, the patient turned the cylinder till the suitable glass was obtained. This plate was subsequently made with a polished surface in front, and was thus made to serve also as a mirror for determining, by means of the ophthalmoscope, the amount of astigmatism in the principal meridians of the eye.

In conclusion, I would take this opportunity of informing those who are desirous of obtaining this instrument that it can be had of its maker, H. W. Hunter, Optician, 1132 Broadway, N. Y. City.

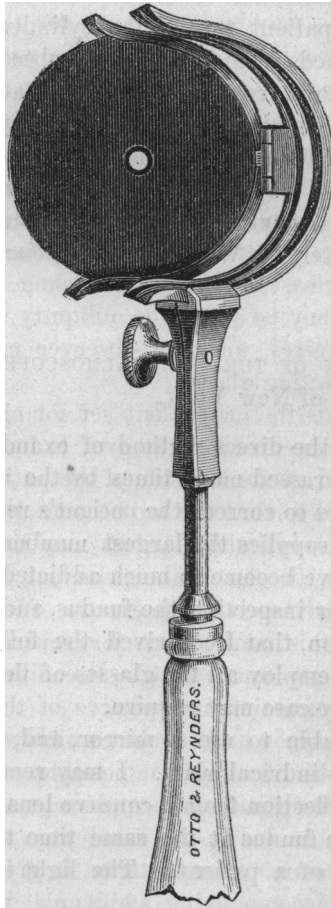
A MODIFICATION OF THE OPHTHALMOSCOPE. By HENRY D. NOYES, M. D., of New York.

In employing the direct method of examining the fundus, I have been embarrassed many times by the want of a suitable number of glasses to correct the patient's refraction. Jacger's ophthalmoscope supplies the largest number, but these are insufficient. I have become so much addicted to the use of the upright image for inspecting the fundus, and for estimating the state of refraction, that I contrived the following instrument to enable me to employ all the glasses of the trial-box, as the exigencies of any case may require.

I wish to be able to use a mirror, and, if needful, both a spherical and cylindrical glass. I may remark that, in many instances, the reflection from a concave lens is quite sufficient to illuminate the fundus at the same time that it corrects the possible myopia of a patient. The light is feeble, but sometimes adequate.

My contrivance consists of three forks, or clips, which make a little more than the semi-diameter of a circle, and are grooved for the reception of either a glass or the mirror. The

three clips are placed in a slot, which may be tightened or loosened by a screw; they may thus be turned around to the amount of a half circle. All move together, and are supported upon a handle, which should be $5\frac{1}{2}$ inches long. Two of the clips are precisely alike; in these the glasses are usually inserted. The front clip has at its middle a hinge, and is intended for the mirror.



I use a plane silvered mirror, the sight-hole being bored through the glass. Such a mirror, it has long since been shown, is eminently adapted to the employment of the direct

method, while for the indirect method a concave mirror of 7 to 10 inches' focus is more suitable. In this contrivance the mirror may be made virtually concave by putting it in the middle clip and setting in front of it a convex lens of 7 to 10 inches' focus. So far as this lens becomes an eyepiece, its influence may be modified at pleasure by putting behind the mirror a concave lens.

The chief advantage of this contrivance is in the fact that all the trial-glasses may be put in use for the upright image. The reason for providing the front clip with a hinge was to give greater accuracy to an examination for astigmatism. When no astigmatism exists it is most convenient to have the clips held at their middle by the slot; the opening of the forks is then upward, and the instrument may be used by either eye at will, without change. But if there be astigmatism the necessity of holding the mirror obliquely influences the effect of the correcting glasses. I therefore hang the mirror on a hinge, so that it may be set to the obliquity which the position of the lamp requires, and the observer may look straight through the correcting glasses.

The cut presents the instrument set for examination of the right eye by the observer's right eye; to look at the left eye, the lamp is placed at the left side of the patient, and the clips are turned around so that the top becomes the bottom. Whatever rotation the cylindrical glass may require to bring its axis to coincide with one of the principal meridians, may be done by simply moving it in the groove of its own clip.

Having used this contrivance for several months I have found it exceedingly convenient. It enables me to diagnose errors of refraction irrespective of the patient's amblyopia, with an accuracy and comfort which, with fewer glasses at my disposal, was previously impossible. How important is this kind of investigation to supplement and sometimes correct the results obtained in the usual way, all skilled ophthalmoscopists appreciate. For instance, in great hypermetropia, which often has accompanying amblyopia, the absolute H. it may be difficult to get without prolonged use of atropine. The observer's eye, armed with the trial-glasses, can soon tell by exploring the retina when the full correction is secured.

It is well known that the accommodation of hypermetropes is almost always relaxed, without atropine, during an ophthalmoscopic examination.

The simple contrivance which I present is properly an appendage of the box of trial-glasses. They are complementary to each other. I use the trial-glasses made by Nachet, which are set in frames, and each has a handle, so that the glass does not become soiled by the fingers. I do not now care to descant at large upon the great advantages of the upright image in ophthalmoscopy, but simply offer this instrument to facilitate this mode of examination, and know that it will soon commend itself to the hearty adoption of any who will give it a fair trial.

If the observer be emmetropic he needs no correcting glass for himself, if he will relax his own accommodation—and this is made much easier by looking with *both* eyes open and keeping one's visual lines parallel. On the other hand, if observer and patient both be emmetropic, I prefer to use a — 24 for the inspection of the optic nerve, because by relaxing accommodation the *lamina cribrosa* is sharply defined, and by using A 1-24 the retina and surface of the disk are perfectly seen. I am tempted to add that a true test of accurate perception of the fundus and estimation of the refraction is not to be found in the large retinal vessels, but in the very small ones, and still better in the stippling which is produced by the choroidal epithelium.

AN IMPROVED EYE SPECULUM. By HENRY D. NOYES, M. D., of New York.

I beg leave to exhibit to the Society a form of eye speculum which I have been using for several months. Before presenting it, I call attention to a considerable number of such instruments, which show the modifications which have been contrived for meeting the indications necessary to the full attainment of the purpose in view.

What is required in a speculum is to separate the lids to the fullest possible degree without causing injurious pressure, directly or indirectly, on the globe, and without becoming itself an embarrassment to the operator.